Remarks/Arguments:

Claims 1-10 and 14-28 are pending in the application.

Claim Rejections - 35 USC § 112

1. Claim 22 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The rejection indicates that the phrase "wherein the gloss is at least 70" is unclear. Applicants amend claim 22 herewith to specify that it is the 60° gloss value to which reference is made. Basis for this amendment can be found at page 15, lines 23 to 24 of the application as filed.

2. Claim 28 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 28 was dependent from canceled claim 12, and is amended herewith to depend from claim 1.

Claim Rejections - 35 USC § 102

1. Claims 1-4, 10, 14-23 and 27 are rejected under 35 U.S.C. 102(a) and 102(e) as being anticipated by Podhajny (US 2003/0091767 A1).

2. Claims 1-4, 10, 14-23 and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Konagaya et al. (EP 0 846 418 A1).

Applicants note that claim 1 recites a film having features that include:

(i) a heat-seal strength of from 100 g/in to 2500 g/in when heat-sealed to itself and

(ii) a barrier to either one or both of water vapor and oxygen, such that the water vapor transmission rate is in the range of 0.01 to 10g/100 inches^2/day and the oxygen transmission rate is in the range of 0.01 to 10 cm^3/100 inches^2/day/atm.

Applicants will show that there is no disclosure in Podhajny or Konagaya of an antimicrobial polymeric film which comprises a substrate layer and a polymeric coating layer, wherein the antimicrobial compound is included within the coating layer and wherein the **coating** provides either one or both of a heat seal strength of from 100 g/in to 2500 g/in when heat sealed to itself and a barrier to one or both water vapor and oxygen such that the water vapor transmission rate is in the range of 0.01 to 10g/100inches^2/day and

the oxygen transmission rate is in the range of 0.01 to 10 $cm^3/100$ $inches^2/day/atm$. Accordingly, the claims are not anticipated by either Podhajny or Konagaya.

Rejection over Podhajny

The rejection states that Podhajny inherently (not explicitly) discloses these features because his films are "prepared with the same polymeric substrate, polymeric coating layer and anti-microbial compound with the same layer thickness" as Applicants' films. Applicants respectfully disagree that Podhajny teaches the same films as claimed.

The rejection does not provide Applicants with a specific set of alleged facts to which they can reply. Instead, the rejection recites a long list of polymeric substrate materials and coating materials taught by Podhajny, the possible combinations of which are too numerous to easily calculate, and thus the exact structure that allegedly inherently anticipates Applicants' claims is not set forth in the Office Action.

In the absence of a clear statement as to exactly which materials the Office alleges to be the same as those encompassed by Applicants' claims, Applicants can only interpret the rejection as based on an allegation that ALL of the possible combinations of Podhajny's materials are the same as claimed, and that all of these combinations inherently result in Applicants' claimed invention.

"In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." *Ex parte Levy,* 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original)[1]

The rejection provides no support for the proposition the heat-seal strength and water vapor/oxygen barrier features of claim 1 and its dependents necessarily flow from each and every one of the possible combinations of Podhajny's materials. Thus, the rejection should be withdrawn.

In an effort to progress examination, however, Applicants provide the following remarks to clarify issues to the best of their ability. Podhajny makes no mention whatsoever of heat-sealability or water vapor/oxygen barrier properties, still less of the specific heat sealability and water vapor/oxygen barrier properties, as recited in claim 1. In one aspect, however, the rejection appears to assert that, because there is an overlap in

some of the broad classes of polymers recited in Podhajny and in Applicants' patent application, the anti-microbial films described in Podhajny must inherently satisfy the criteria specified in claim 1. As will be explained in more detail below, this assertion is incorrect and involves reading detail into Podhajny that is without technical basis. In particular, the rejection appears to rely on a premise that all polymers falling within the same broad polymer class have the same properties, particularly with respect to heat-seal strength and transmission rates for water vapor and oxygen. This premise is, however, incorrect.

Podhajny is concerned with a method of applying an anti-microbial coating to the surface of a packaging material. The coating comprises a polymer and anti-microbial zeolite. The anti-microbial zeolites comprise from 0.5 to 10 wt% of the coating. Both water-based and solvent-based coating systems are described. Paragraph [0031] indicates that when the dispersion is solvent-based, a wide variety of polymers may be employed including polyamides, acrylics, polyvinyl chlorides, methyl methacrylates, polyurethanes, ethyl cellulose, polyvinylbutyral, polyketones and nitrocelluloses. Paragraph [0040] teaches that if the coating is a printable water-based coating, various polymers including sulphonated polyesters, polyurethanes, polyamides, maleics, shellacs and acrylics may be used.

The lists provided in paragraphs [0031] and [0040] recite broad classes of polymers. The only apparent overlap with the polymers explicitly identified in Applicants' application is the "acrylics" group (see page 10, lines 13 to 15 of the application as filed). However, this is a very broad class of polymers and Applicants point out that not all acrylic polymers are heat-sealable and/or provide a barrier to water vapor and/or oxygen. Indeed, acrylic polymers satisfying these conditions are a small subset of all acrylic polymers (a very broad class), and there is no disclosure in Podhajny of this subset of polymeric materials. As a case in point, Applicants note that the polymers used in the coatings of Podhajny's Examples will not satisfy the requirements of claim 1. Accordingly, Podhajny does not anticipate claim 1 or any of its dependents.

Rejection over Konagaya

The rejection states that Konagaya inherently (not explicitly) discloses the recited heat-seal and barrier property features because his films are "prepared with the same

[1] MPEP 2112 IV.

polymeric substrate, polymeric coating layer and anti-microbial compound with the same layer thickness" as Applicants' films. Applicants respectfully disagree that Konagaya teaches the same films as claimed.

The rejection does not provide Applicants with a specific set of alleged facts to which they can reply. Instead, the rejection recites a long list of polymeric substrate materials and coating materials taught by Konagaya, the possible combinations of which are too numerous to easily calculate, and thus the exact structure that allegedly inherently anticipates Applicants' claims is not set forth in the Office Action.

In the absence of a clear statement as to exactly which materials the Office alleges to be the same as those encompassed by Applicants' claims, Applicants can only interpret the rejection as based on an allegation that ALL of the possible combinations of Konagaya's materials are the same as claimed, and that all of these combinations inherently result in Applicants' claimed invention.

"In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." *Ex parte Levy,* 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original)[2]

The rejection provides no support for the proposition that the heat-seal strength and water vapor/oxygen barrier features of claim 1 and its dependents necessarily flow from each and every one of the possible combinations of Konagaya's materials. Thus, the rejection should be withdrawn.

In an effort to progress examination, however, Applicants provide the following remarks. The primary focus of Konagaya is to provide an anti-microbial composition which comprises an inorganic or organic anti-bacterial compound and a hydrophilic substance. At page 9, lines 27 to 34, Konagaya teaches that the anti-microbial composition may be mixed with a thermoplastic or thermosetting resin before moulding and details of suitable polymers are provided, including polyesters and polyvinylidene chlorides. In this embodiment, it is clear that the anti-microbial compound will be incorporated into the film substrate and will not form part of a polymeric coating applied to the substrate. Accordingly, the pending claims are not anticipated by this disclosure. Konagaya at page 9, lines 38 to 40 teaches that the anti-microbial compositions may be applied to the surface of a large number of

possible substrates. The majority of the examples included in Konagaya are concerned with this embodiment, wherein the anti-microbial compound is incorporated into the film. However, there are several examples where the antimicrobial compound is applied as a part of a polymeric coating, specifically, examples 22 to 35 and 39 to 41. However, the coatings described in the examples are not capable of providing either the heat-seal strength or the barrier properties recited in claim 1.

In Konagaya's examples 22 to 35, the anti-microbial compound used is an organic compound, specifically, the tri-n-butylhexadecyl phosphonium salt of dimethyl 5-sulfoisophthalate. While this anti-microbial compound is included in a polymeric coating, the particular comonomers used (specifically PEG) are such that the coating will not provide a heat-seal strength and/or water vapor and/or oxygen barrier properties as required by claim 1. In examples 39 to 41, a coating is prepared which comprises silver in isophthalate/sodium 5-sulfoisopthalate/ethylene glycol/n-butyl-cellulose. This coating will not have the required heat seal and/or barrier properties. This is particularly the case given the thicknesses of the coating layers applied which are less than 0.5 μm (see, for example, Example 24, 0.3 μm and Example 34, 0.2 μm). Thus, Konagaya does not anticipate claim 1 or any of its dependents.

Further Remarks

In addition to neither Podhajny nor Konagaya anticipating the present claims, Applicants note for the Examiner's convenience that it would not have been obvious at the time of invention to modify the teachings of either reference in ways that would be necessary to arrive at the claimed invention.

Applicants have found that, for a given amount of anti-microbial agent, a relatively thinner coating provides greater anti-microbial activity than a thicker coating and that, in combination with this, it is possible to provide an antimicrobial film which has heat-seal and/or barrier properties (page 2, lines 14 to 22 of the application). As noted above, there is no mention of heat-sealability or barrier properties in either Podhajny or Konagaya. This being the case, when starting from either document, there would have been no reason for the skilled person to modify the films described therein as would have been required to arrive at Applicants' invention.

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[2] MPEP 2112 IV.

In particular, as noted above, the polymers that provide the required heat-seal and barrier properties are a small selection from the broad classes recited in Podhajny and Konagaya. Podhajny is concerned with providing a coating which releases anti-microbial metal ions when exposed to moisture which would have directed the skilled person away from considering a film which has water vapor and/or oxygen barrier properties. Similarly, there is no mention that the coating should impart any heat-seal properties to the film. The emphasis in Konagaya is on the importance of including a hydrophilic agent in order to increase the efficacy of the anti-microbial surface. Again, this disclosure would not have prompted the skilled person to investigate heat-seal and barrier properties. With no guidance to be focusing on heat-sealability and barrier properties, there would have been no reason for the skilled person to have worked in the necessary subsets of polymers. Accordingly, it is submitted that the claimed subject matter would not have been obvious at the time the invention was made.

Claim Rejections - 35 USC § 103

1. Claims 1-10 and 14-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Podhajny (US 2003/0091767 A1) in view of Sugiura et al. (US 5,296,238).

2. Claims 1-10 and 14-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Konagaya et al. (EP 0 846 418 A1) in view of Sugiura et al. (US 5,296,238).

Both rejections rely upon the primary reference to provide all of the recited claim features, other than those relating to the anti-microbial compound, for which Sugiura is relied upon. As noted above, however, neither of the primary references teaches at least the claim features relating to heat-seal strength and water vapor/oxygen transmission properties. Thus, the combinations of references do not support prima facie obviousness, and the rejections should be withdrawn.

Conclusion

For the reasons given above, Applicants submit that the application is in condition for allowance and respectfully request notification of same. Applicants invite the Examiner to contact Frank Tise, undersigned, if it appears that this may expedite examination.

Respectfully submitted,

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FPT/gdb

Attachments:

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